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The official Journal of the Rocks and Minerals Association

Chips from the Quarry

SWEDISH MINES USE ULTRAVIOLET SOLARIUMS

Ultraviolet solariums installed by mining companies in North Sweden resulted in a marked reduction of absences due to illness, according to an article by Dr. William T. Anderson, Jr., appearing in *Archives of Physical Therapy*. Dr. Anderson, formerly research director of the Hanovia Chemical & Mfg. Co., Newark, N. J. is now a Lieutenant in the United States Naval Reserve.

"The miners gained 134 additional working days per hundred workers during the first year the solariums were operated," Dr. Anderson wrote, quoting the experience of a Swedish medical officer. "This was a reversal of the previous trend and contrasted sharply with that of neighboring mines which did not have untraviolet solariums."

Dr. Anderson explained that the Swedish mines were influenced to adopt ultraviolet therapy by reports from Great Britain and Germany.

"The Hitler regimen in Germany during their preparatory years for war recognized the importance of good health for Germans," the article states. "As part of their health programs they advocated the employment of sun lamps and installed many solariums at mines and factories. In the Ruhr district alone there were not less than 6 sun ray clinics.

"The British began their preparations for rearmament with due consideration for the health of their workers. Ultraviolet baths under the supervision of a medical officer were recommended in many instances and by 1943 the list of operating installations of quartz lamp solariums read like a 'Who's Who' of the British mining and manufacturing industry.

"Recent reports have advised that no method of preventing colds is effective, and still observations continue to be made and claims staked that ultraviolet irradiation of the individual does reduce the incidence of colds. The most recent claims have originated in Great Britain. For example, the medical officer of a large factory studied the colds of 1,635 employees and tried various preventives, among them ultraviolet irradiation. He concluded that, whereas the average absence due to colds amounted to one hundred and six days per hundred workers, the group which received ultraviolet irradiation with quartz mercury lamps had only sixty-six days of absence per hundred persons. Of all the preventives tried, this one alone showed a definite effect. Still other tests made in London, involving 1,444 persons, indicated a notable reduction in absences because of illness, and in particular because of the colds, for those who received sun ray treatments under medical supervision in the light clinics.

"Allied to but aside from this question, the evidence that the incidence of infections of the respiratory tract may be controlled to a notable degree by ultraviolet air sterilization continues to mount. In addition to hospital experiments, factory installations in the United States have indicated a marked decrease in colds and other respiratory ailments with resulting less absenteeism.

"Ultraviolet solariums have been widely used in Russia in the factories. It is claimed that their use has assisted in decreasing absenteeism on account of illness and that a precision worker makes fewer errors and shows less fatigue during periods when he is subjected to light baths than at other times. No reason was given for this alleged improvement."

ON THE SICK LIST

For the past three weeks we have been on the sick list. This will explain why many letters and orders, demanding our personal attention, did not receive the usual prompt service.

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USES OF AERIAL PHOTOGRAPHS FOR THE MINERAL COLLECTOR

By ALBERT L. KIDWELL

Introduction

Aerial photography, as a science, was born during World War I, passing through a stage of adolescence during the years which followed, and is only now beginning to receive the attention it merits.

Aerial photographs consist of two types: vertical photographs taken with the axis of the camera perpendicular to the earth's surface; and obliques, taken with the axis of the camera tilted. This discussion is concerned primarily with the former.

General Uses of Aerial Photography

By use of fast, camera-equipped planes, hundreds of pictures can be taken on a single flight over enemy territory. In a matter of hours, reasonably accurate military maps can be compiled from these photographs. After bombing missions have been carried out, the damage done to the target is usually photographed as soon as the smoke has cleared away. In modern, mechanized warfare it is imperative to keep constant check on the disposition of enemy strength. This can only be done by taking pictures from reconnaissance planes, stripped of all guns to increase their speed and remove all temptation for the pilot to stop and "fight it out".

The most important peace—time use of aerial photographs is in the compilation of maps. Maps can be made more accurately and at a lower cost by this means than by the old conventional ground surveying methods. Especially is this true in almost inaccessible areas such as the Florida Everglades and the rugged mountainous country found in large parts of the western United States. An aerial photograph is in itself a very detailed map, but, for several reasons, the scale is not constant over an entire photograph and differs between photographs. Photogrammetry is the science by which these scale differences are eliminated and a standard map produced.

Aerial photographs have been used to good advantage by the Agricultural Adjustment Administration in determining crop distribution, by the Soil Conservation Service in solving erosion problems, and by the Forest Services of both the United States and Canada in making forest inventories. The United States Geological Survey uses aerial photographs extensively in mapping and carrying on its geological field work. Exploratory expeditions to both the tropics and the polar regions have used aerial photography to record much valuable information.

The geologist is beginning to make wide use of aerial photographs in the study of land forms and structural features and as base maps for geologic mapping in the field. Many rock formations, because of their great resistance to erosion, stand out in bold relief. Some others are easily eroded and also give rise to characteristic land forms. Distinct types of vegetation often grow on particular rock outcrops. This is usually more readily observed on the photographs than in the field. To illus-

trate this, a certain horizon of the Gasconade formation, which outcrops in the Missouri Ozarks, supports a dense growth of cedars. These trees appear darker than the surrounding foliage on an aerial photograph, especially if the photograph is taken during the winter. Faults are sometimes easily discernible on aerial photographs, especially if the movement has taken place during recent geologic time. A good example of this is the San Andreas fault zone of California, which appears on the photographs as a very distinct band. Many of the minor land forms which are of insufficient magnitude to appear on most maps are often readily observed on aerial photographs. The use of aerial photographs in conjunction with geologic maps is very useful in teaching geology to both beginning and advanced students.

These are only a few of the outstanding uses of aerial photographs. Several entire books have been written on their uses to the geologist alone.

Use of the Simple Stereoscope

A single aerial photograph shows very little vertical relief, that is, it gives only two dimensions, as in a map. However, by looking at two overlapping photographs simultaneously, with the aid of a stereoscope, the effect of relief is added as though a person were actually observing a three-dimensional model. This effect of relief is considerably exaggerated, depending upon the type of stereoscope used.

A stereoscope consists of a system of mirrors, lenses, or both, which enables the observer to see simultaneously, the same point on two overlapping photographs. Since each eye registers a slightly different image, a sense of depth is added. This fact makes it possible to distinguish many objects which would otherwise be overlooked. Elaborate machines using this principle have been constructed. However, a simple stereoscope to satisfy the needs of the average person can be built at a cost of a very few dollars by following the instructions given in almost any book on photogrammetry or may be purchased from an optical dealer. Of course, this equipment is almost impossible to obtain at the present time.

Application to Mineral Collecting

How is all this of any value to the mineral collector? The answer should by now be fairly obvious. With a little practice, it is much easier to follow the local terrain on an aerial photograph than on the most detailed map. It is possible to pick out small, isolated clumps of brush on most photographs, therefore, anything so large as a mine dump stands out like the proverbial sore thumb. Thus, it is relatively simple to plot on a photograph almost the exact spot where any particular mineral specimens were found. Many likely places for good collecting, such as mine dumps, quarries, and road cuts, can usually be detected after a careful study of the aerial photographs. The fossil collector can spot many rock outcrops which might have been overlooked in a very careful field examination. The use of a geologic map with the photographs is always helpful if such a map is available. Often a particular mineral or fossil will occur in only one formation or along a certain contact and the geologic map shows likely places to study on the photographs.

All roads and trails, unless obscured by dense forest growth show plainly on aerial photographs, and this is a great aid in planning a collecting trip. Unfortunately, the quality of the road can be judged only approximately from the photographs. Impassable roads do not always appear as such, but the best roads can be identified by their width and gradual, even curves.

Some areas have an abundance of mineral localities, in which case it is desirable to prepare a mosaic. This is merely a composite picture made by obtaining enough individual photographs to cover the area, trimming them so there is no overlap, and mounting them in their correct relative positions on a piece of heavy cardboard or beaverboard. The preparation of an accurate mosaic is somewhat more complicated and requires considerable practice. A mosaic which is sufficiently accurate for most purposes

can be made by the above method, but if a highly accurate one is desired, reference should be made to any of the books listed with this paper.

Each locality should be marked on the mosaic by an appropriate symbol and described fully in the collector's catalogue. Each collector will want to work out his own system of symbols depending upon what he collects and how systematically he goes about it.

Where and How to Order Aerial Photographs

There is approximately 60 per cent overlap between successive photographs in a flight line, and this should be taken into consideration when ordering prints. If the photographs are to be studied under the stereoscope, all overlapping prints in the area to be studied should be obtained; because, as noted earlier, stereocopic examination is dependent upon this overlap. It is also desirable to have all the overlapping photographs for the construction of a mosaic. This will permit one to trim the pictures for the mosaic in such a way that all of them will be approximately the same scale and will thus match.

Large areas in the United States have been photographed by several of the governmental agencies and by commercial companies such as Edgar Tobin Aerial Surveys, San Antonio, Texas; Abrams Aerial Surveys, Lansing, Michigan; and Fairchild Aerial Surveys, Los Angeles, California. The size of the contact prints sold from these sources is usually 9 by 7 inches in size. The scale of the average photograph is about 1:20,000, that is, one inch on the photograph equals 20,000 inches on the ground, or about 3 inches equals one mile.

Anyone desiring prints of a certain area should go to the nearest office of the Agricultural Adjustment Administration, the Soil Conservation Service or the U. S. Forest Service. These offices usually have index maps showing the areas photographed in the vicinity and corresponding price lists. The cost per print is about 25 cents. If nothing is available, it is then advisable to write to the U. S. Geological Survey, Washington, D. C., or to a commercial firm for any information they might have.

Due to wartime conditions of censorship, aerial photographs cannot now be obtained, but they will again be available after the war.

Conclusions

This treatment of such a broad subject is necessarily very sketchy. Aerial photographs appear at first rather formidable to the layman, but with a little study and practice anyone can become proficient in their interpretation. Those persons wishing to study the subject more fully should obtain any of the excellent books listed below.

The writer is firmly convinced that aerial photographs will be a great aid to the average mineral collector in locating and cataloguing mineral localities, and, also, in providing a broad picture of the geologic relationships involved in any area.

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Eardley, A. J., Aerial Photographs; Their Use and Interpretation, Harper and Brothers, New York, 1942.—$2.75

Smith, H. T. U., Aerial Photographs and Their Applications, D. Appleton-Century Co., New York, 1943.—$3.75

Putnam, W. C., Map Interpretation With Military Applications. McGraw-Hill Book Co., New York, 1943.—$1.25.

PETRIFIED WOOD FROM MARTINIQUE

In the southernmost point of the French island of Martinique, in the West Indies, is a petrified forest. From this forest have come some very interesting specimens. A singular specimen is on exhibition at the American Museum of Natural History, in New York City.

The specimen (silicified wood) looks like fresh pine wood with the bark taken off. It is 6⅛" long, 1⅞" wide, and shows truncated branches, knots, rings, and fibrous decay.

A TRIP TO CARLSBAD CAVERNS

By SGT. WILLIAM N. SECRIST
U. S. Army

My trip started on Thursday, May 27th, 1943. I really began three or four weeks before to think and plan the trip. I left the post at 7 o'clock, rode into Clovis, N. Mex., and purchased my ticket to Carlsbad, (also in New Mexico). The bus left Clovis at 8:15 a.m. Most of my fellow passengers seemed to be young mothers.

The country had changed quite a lot since I first rode into town in March. There are lots of wild flowers along the road and in the pastures; yellow flowers like daisies, dark henna-red ones like velvet buttons on the tips of long stalks, great patches of yellow flowers and masses of a lavender and white flower that seems to like the fences and edges rather than the open, sunny areas. The trees and bushes are leafed out. It is surprising what a few weeks and a little rain can do; transform a desert into a paradise, a dust bowl into fertile fields.

A sand dune, bare, red-brown, stands out against the sky; an island in a sea of green. This is all pasture land we are traveling through; grass, sage brush, Spanish bayonett, mesquite. We stopped for a few minutes at Portales, home of a girls' school and frequent haunt of the boys from the Base. Then on again thru country that changed very little until we neared Roswell. We crossed the Pecos River, now a very small stream, but its wide banks and the information that the bridge was washed out last year tell of its power. As we neared Roswell, there were more outcroppings of limestone and less of the "cleche" rock, a coarse gypsum rock, so abundant near Clovis.

Roswell has water in abundance and you can see its effect in the great shade trees, flowers, shrubs and well-kept lawns. The farms are irrigated; the water pumped into large reservoirs and led by ditches into the fields. Near the city the land is cultivated. Farther out cultivated fields divide the land with pastures. Roswell is the home of the New Mexico Military Institute, housed in beautiful buildings. There was a herd of beautiful horses in a large corral near the buildings. Roswell is also the home of a large air base. We arrived in Roswell at 11:35 and left at 11:45, so I merely had time to stretch before we were on our way again.

We arrived in Carlsbad at 2:10 p.m. I registered at the Crawford Hotel, removed the stains of travel, had lunch and sallied forth to see the town. The way in on the bus reminded me of my home town (Rochester, N. Y.) with its well-kept lawns, nice homes and beautiful shade trees. Every soldier I have ever talked to who was from the East has mentioned the lack of trees and greenry in the West, and how much they miss the trees they knew. They have a beautiful City Hall in Carlsbad, built in pueblo style. I finally landed at the library and museum where I met a most charming lady, a Mrs. White. The museum is located above the library and consists of one large room with three alcoves. There are exhibits of strategic minera's, minerals from the potash mines, and from the caverns. They have recently installed a case of fluorescent minerals that displays so well the hidden beauties of these minerals. There are displays of ancient pottery and other artifacts from Indian graves in this region. One case contains artifacts and skeletons from burials of the Basket Makers, taken from a cave in the Guadaloupe Mountains. The Basket Makers, so named because they buried their dead in baskets woven from cactus fibers, flourished about 4,000 years ago. They burned the bodies of the adults and placed the charred bones and other trinkets in baskets; infants and small children were placed whole in baskets. The exhibit shows two children's skulls and bones and the charred bones of an adult. A tragedy that may be blamed indirectly on Hitler was the breaking of the two infant skulls. One is temporarily held

together with adhesive tape, the other lies in pieces in its place awaiting the return of the curator away on war work. The vibration of the planes passing over the museum caused these skulls to crumble. Modern machines doing in a short time what forty centuries could not do. These skeletons were found wrapped in their baskets, under fifteen feet of dry sand and owe their preservation to the dry sand and dry climate.

I talked with Mrs. White for a long time. Then went down to the library and read some *National Geographics*. I had not seen any since Keesler Field. After reading awhile, I went back to the hotel, had dinner and went to a show. Then to bed! What a glorious feeling to sleep in a room by oneself—between sheets—in a bed! Luxury beyond description. I am afraid I did not enjoy the feeling very long tho, as I dropped off to sleep immediately, to arise about 8 the next morning (another luxury), had breakfast and waited at the bus station until 9:30 when the bus left for the Caverns.

The Caverns are located about 27 miles south and east of the city of Carlsbad. The rolling plains near Carlsbad give way to short, choppy hills in which the caverns are located. We were told there are many small caves near the cavern. It is a beautiful drive after you enter the park. The road has been cut along one side of a canyon, bare rock walls, cedars, mesquite, flowering cactus, yellow, purple and red flowers, vivid against the green of the cactus. They have planted a cactus garden near the entrance to the caverns and along the ramp going down into the cave.

At first glance the cave is just a hole in the ground, tumbled piles of boulders, and the path or ramp zigzagging down through a side opening, down, down. One can look back and the opening is a small circle of blue light. The color is very noticeable on the way out after becoming accustomed to the yellow artificial light. And after being in that utter blackness when they turned out the lights, daylight looks very good indeed. The air is cool, 56° all the time, the only change being in the amount of moisture in the air. There was a little sign that said that people do not become thirsty because of so much moisture in the air.

One part of the cave goes back into the hill for nearly half a mile. It is the home of a large colony of Mexican Bats, estimated between three and five million. They come out every evening about sunset and return in the morning near sunrise. They say it is a most spectacular sight. First the whirring beat of leathery wings, then a few black forms that change to a solid black mass. A cloud, a black cloud out of the mouth of hell.

As I walked down the ramp I thought of some lines from Virgil's *Aeneid*, lines that describe the trip Aeneas made into Hell or Avernus. There are caves there in Italy which the ancients thought was the mouth of hell. "Facilis descensus Averno"—"Easy is the road to hell, but to recover one's steps, to escape to the upper air, that is work, that is labor." How true these lines are we were to know on our way out. It was very easy to walk down many flights of stairs, several hundred feet, but to climb back up. "That is work, that is labor." On the way down the stairs the first stalactites and stalagmites appear. They grew more numerous and beautiful as we continued downward, deeper into the earth, at one point 800 feet below the surface. I cannot describe the awful beauty and majesty of the many rooms we saw. I know I was filled with wonder and awe and amazement; and then a feeling of Man's utter insignificance in the vast scheme of things. Here were giant pillars of stone, stalagmites, that were fifty and sixty million years in the making. A hundred years to form *one* cubic inch. It is too stupendous to imagine!

There is a magnificent room, a fairy land, called the King's Palace. Innumerable stalactites, stalagmites, some huge, others slender; some growing both up and down until they meet to form a pillar or column. There are draperies of onyx, hanging in beautiful folds, translucent, magnificently banded, glowing with the lights placed behind them.

There are crystal growths on some sections of the wall, crystals of aragonite; like frost on window panes in three dimensions instead of the usual two, or like coral growing in the sea. The forms take weird shapes, some bearing fancied resemblance to animal or bird life. There are pools of clear, cold green water; some still and quiet, others alive and moving, their surfaces rippled by the constant drip from stalactites above. These stalactites are alive and growing. At the present time only about five per cent of the cavern is alive. These few are wet and glistening with the water constantly running over them and adding those tiny grains of stone to their ancient bulk. Because such a small percentage of the cavern is alive and growing, it is classed as a dead cave.

They have a very nice lunch room in a large chamber 450 feet underground. We had sandwiches, milk or soft drinks, cake and oranges. It felt good to set down and rest after our long walk. After we had eaten the party split up, those who were going to take the elevator back to the surface, and the hardier souls who were going to walk. I was not keen on the idea of walking but did not want to miss anything so I walked (climbed might be a more apt word.) On the way back we stopped and sat down. Then they turned the lights out. Only those who have been in caves or mines can know how black it was. Utter, absolute blackness; a darkness so intense one could almost feel it. Then they played "Rock of Ages" and beginning at the entrance slowly turned the lights on so that we could see the light approaching. A bit theatrical but effective. Then on up and up to the surface. It was about 3:30 when we came out. A short wait for the bus, then back to Carlsbad.

My bus did not leave for Clovis until 5:30 Saturday afternoon so I walked around most of the morning. I stopped in the Catholic Church and watched a nun painting a mural. It was beautiful, painstaking work. A labor of love. Then back to the museum for another chat with Mrs. White and a visit to the library. I had thought about writing some letters and working on this log but a magazine I had bought the night before proved too tempting. At 5:30 our bus rolled out, starting the long drive back to the Base. There was a nice clean-cut youngster who sat beside me from Roswell in. He was very tired and sleepy and his head kept nodding. I wanted him to lean against me but he would not do it. It was nearly 11:30 when we arrived in Clovis and 12 when I arrived at the Base.

One of the first things that greeted me when I did arrive in camp was a notice that three-day passes would not be granted except in emergencies. I had gotten mine just in time.

EDITOR'S NOTE: The world-famous Carlsbad Caverns are in southeastern New Mexico.

MOLYBDENITE ON BAKER ISLAND, ALASKA

One of the most promising molybdenite occurrences in Alaska is a deposit on the east coast of Baker Island, in the southeastern part of the country. Baker Island lies about 6 miles and midway off the west coast of the huge Prince of Wales Island. The outline of Baker Island is triangular in shape—the island is about 16 miles long north and south, about 10 miles wide at its north end, and tapers almost to a point at its southern extremity.

Molybdenite is found at a number of localities along the eastern and southeastern coasts but is especially prolific in areas where granites are cut by quartz veins. The molybdenite, associated with pyrite and pyrrhotite, occurs in the quartz veins.

Reference

OCCURRENCES OF MOLYBDENUM MINERALS IN ALASKA. By Philip S. Smith. U. S. Geol. Sur., Bull. 926-C, Washington, D. C., 1942, pp. 166-167.

MEMORIAL OF BENJAMIN LEROY MILLER

By DUNCAN STEWART, JR.
Lehigh University

Professor Benjamin LeRoy Miller died March 23, 1944, following a heart attack in Williams Hall, Lehigh University, where for thirty-seven years he had his office. He seemed in excellent health a bit previously when he returned from a six week's business and pleasure trip to Florida.

Dr. Miller was born at Sabetha, Kansas, on April 13, 1874, the son of Jacob J. and Mary (Moorhead) Miller. He married Mary A. Meredith on September 15, 1904, and she passed away May 30, 1930. He is survived by his daughter Ruth Meredith (Mrs. Otto H. Spillman) and her three children, and Ralph LeRoy, his son. He was a member of the Society of Friends.

The A.B. degree was granted him by the University of Kansas in 1897; his A.M. was taken at Penn College, Iowa, in 1898; his Ph.D. was awarded by Johns Hopkins University in 1903. In 1941 Moravian College gave him the honorary Sc. D. degree.

Before coming to Lehigh University in 1907, as Professor of Geology, he had instructed at Penn College and Bryn Mawr College. During a sixteen weeks' summer session, in 1943, he taught at Princeton University. He had been associated with the State Geological Surveys of the University of Kansas, Iowa, Maryland, and Pennsylvania, and the United States Geological Survey. Professor Miller was a cooperating geologist with the Pennsylvania Geological Survey from 1919 until the time of his death. He was a consulting geologist for many cement companies in the Lehigh Valley. Professor Miller was the consultant for the Wild Creek Gravity Water Supply System that now supplies the City of Bethlehem.

Dr. Miller was a subscriber to ROCKS AND MINERALS from 1934, and his library contained all the issues from Volume 1. He was affiliated with Sigma Xi, Iowa Academy of Science, American Association for the Advancement of Science, the Geological Society of America, American Institute of Mining and Metallurgical Engineers, Seismological Society of America, Society of Economic Geologists, Mineralogical Society of America, Pennsylvania Academy of Sciences, Geological Society of London, and Tau Beta Pi. He was consulting Editor for the *Engineering and Mining Journal,* 1920-1922. Dr. Miller was honored in 1942 by being made Chairman of the Industrial Minerals Division of the A. I. M. E.

Fortunately, Professor Miller was in such a position that it was possible for him to travel extensively. In 1927 he circled the world, and again in 1937, when he attended the International Geological Congress at Moscow, returning to the States by way of China and Japan. An early trip was to Great Britain and Ireland; another to central Europe; a third to Spain to attend the International Geological Congress; a fourth to Scandinavia; South America in 1915; Alaska in 1940; and to Central America in 1941. His trip to South America was followed by the publication, in 1919, of *The Mineral Deposits of South America,* which he wrote in collaboration with Joseph T. Singewald, Jr.

In looking over Dr. Miller's some 100 publications we note variety, but emphasis on the side of economic geology. Probably his greatest contributions are to the geology of the State of Pennsylvania. Among his more recent publications are *Northampton County, Pennsylvania,* and *Lehigh County, Pennsylvania,* both comprehensive *Bulletins of the Pennsylvania Geological Survey.* Included in his bibliography are such topics as physiography and geology of the Bahama Islands, the Virginia Coastal Plain, mineral pigments of Pennsylvania, brown ores of Cuba, the Coastal Plain of North Carolina, graphite deposits of Pennsylvania, manganese occurrences of Pennsylvania, lead and zinc ores of Pennsylvania, limestones of Pennsylvania, the physiography,

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BOAT RACE GAVE CHILE CONTROL OF STRATEGIC STRAITS OF MAGELLAN BY 24-HOUR MARGIN

SANTIAGO—The storm-swept Straits of Magellan, only maritime link between Atlantic and Pacific until the Panama Canal was built, might now be French had it not been for a tiny, two-gun Chilean corvette of only 43 tons displacement. How this American republic won control of the vital straits by a 24-hour margin in a race between the diminutive warship *Ancud* and the powerful French frigate *Phaeton* a century ago makes one of the most thrilling episodes in all American history.

The year 1843 found Chile with nominal control to the straits by virtue of old Spanish colonial grants, but without actual jurisdiction over them. International usage required a nation to establish a settlement, no matter how small, on unoccupied territories in order to claim them, and Chile had failed to meet that requirement.

As explorers from half a dozen European powers ventured farther and farther into the Pacific, claiming island after island for their respective homelands, the importance of the Straits of Magellan as a gateway to the East became more and more apparent. First to attempt to establish claim to the southern tip of South America and dominate the straits was France. In the summer of 1843 the *Phaeton*, one of the fastest ships in the French navy, was outfitted for an unusually long voyage and set sail with a picked crew for an undisclosed destination. That destination was the Straits of Magellan, and on board the *Phaeton* was a number of convicts destined to settle the colony which France had planned for Cape Horn.

News of the French warship's mysterious journey across the Atlantic filtered into Chile, and as further reports were received, its destination and purpose became clear. Spurred on by the urgings of Bernardo O'Higgins, then living out his last years in exile in Peru, President Bulnes ordered the two-gun corvette *Ancud* from the seaport of the same name to take possession of the straits for this country.

The *Ancud*, commanded by Captain John Williams, an English sailor serving in this country's navy at the time, set sail with a crew of 23 and a month later—on September 21, 1843—dropped anchor off the site of present-day Magallanes. A small group of convicts from the Ancud penitentiary was landed, and with a 21-gun salute the *Ancud* claimed the southern extremity of the continent for Chile by establishing a penal colony on the spot.

Exactly 24 hours later the *Phaeton* entered the harbor and dropped anchor. The powerful French warship might easily have blown the *Ancud* out of the water and taken possession of the straits by force. But with characteristic Gallic chivalry its commander ordered a salute to be fired—the salute of a foreign man-o'-war on entering the territorial waters of a friendly nation—and a few hours later ended his fruitless dash across the Atlantic by raising anchor and setting sail for France.

A contemporary Chilean writer has described the answer which the *Ancud's* tiny battery made to the French warship's chivalrous salute. With justifiable pride, he wrote:

"The frail corvette trembled in every timber as it proudly answered the salute of the frigate. Its diminutive cannon seemed to swell in the eyes of its crew, and on that day Chilean powder was the loudest, the most brilliant and the most powerful in the world."

Today, thanks to the little corvette and a bare 24-hour margin, the lone star of Chile waves over the southernmost beacon in the world. The Straits of Magellan are in American hands, and with the great canal to the north, speed the warships of democracy from coast to coast of the American continent in a two-ocean war against aggression, just as they sped the *Oregon* from Pacific to Atlantic more than 40 years ago in another war to free an American nation from foreign domination.

RUINING THE BEAUTY OF NATURE

By T. ORCHARD LISLE

Some of the most attractive-looking minerals have been found within twenty miles of New York City, and I believe that I possess the most beautifully-colored amethyst crystal cluster ever found in the United States. The crystals are a very dark purple with a faint suggestion of smoky quartz, as well as being very clear.

About three years ago I was "prospecting" in the Vandermade quarry at Prospect Park, in Paterson, New Jersey, when Pete Vandermade, who operates the big steam shovel, blew the whistle. I looked up from the other side of the quarry and saw him pointing to a large bowlder which he had put to one side with the bucket.

Hastening over I had before me one of the most lovely things I ever had seen. Some of the traprock at this quarry is soft and easily broken, and some is exceptionally hard. This bowlder was of the hard variety. But it had a vug, pointed-egg-shape, about 15 inches long, four inches wide and six inches deep, I should say.

It was lined with a layer of green prehnite, on which were reposing white calcite crystals. At first I thought they were datolites, but the greenish tinge was the color of the prehnite showing through. The calcite crystals were about half-inch in size, and on the top of each crystal termination, was perched, or pivoted, a small doubly-terminated red stilbite. Such a formation must be extremely rare, especially as the stilbites were not of the usually brown snub-nosed variety, but more like quartz crystals, each a half-inch long and about 3/32" diameter, and a very nice red. Realizing that great care would be needed, I took a fairly small chisel and went to work on the hard rock in the hope that I could cut around and obtain the entire specimen intact. Alas, almost the first light blow of the hammer caused the stilbites to fall off the calcite crystals and the calcites to break away separately from the prehnite. In a moment this beauty of nature was a mass of broken fragments.

I could only think that when the bowlder was dynamited the previous afternoon, the real damage had been done. I managed to save from the inglorious wreck two calcites, each with a stilbite perched on its point. One of these broke away later. The last one I gave recently to Dr. A. F. Rogers, Professor of Mineralogy at Stanford University (Stanford University, Calif.), for his micromount collection.

LUNDU DIAMOND DISTRICT OF ANGOLA

By HORATIO C. RAY

San Juan, Puerto Rico

Diamonds occur in the Lundu District of northeastern Angola, West Africa, not far from the Belgian Congo line. The stones are generally larger and also of higher quality than those from the mines of Belgian Congo. Generally the accompanying minerals are the same as those occurring in the Kasai field of Belgian Congo. Magnetite is much more common, garnet, cyanite, and staurolite less important. There is also much more hornblende, tourmaline (black), and pyroxene in the Lundu District. Most of the diamond-bearing regions of both Angola and Belgian Congo is sandy, with rock outcrops rather scarce except in some rivers. The mines are all placer workings.

Angola has lots of copper prospects—much further to the south—but so far they are of little value.

THE AMATEUR LAPIDARY

VERTICAL UNIT FOR GRINDING SPHERES

(Adapted from an old Victrola Motor)

By ALVIN A. HUFNAGEL

Grinding and polishing spheres is really not as difficult as one might imagine. In fact the author finds it simpler than making Cabochons, even tho it may take a little more time. Grinding certain minerals in the shape of spheres has another advantage; viz. those which show asterism or chatoyancy (as Rose Quartz, Garnet, Moonstone, Tiger Eye, etc.) can be made to show their very best side without any knowledge of the optics of crystals. After the sphere has been cut, it may usually be sawed into two perfect cabochons, requiring only that the base be subsequently polished.

A vertical unit also has advantages over a horizontal one, chief of which is that it is less tiring. No effort is required to keep the sphere against the pipe, and when a rest is desired, the ball may be left in its original position.

To make the unit, one needs a large motor. A portable victrola motor is too weak. As there are many types of motors, not many dimensions are given. Individual ingenuity must be used not only as to the dimensions of the parts, but also as to the method of adapting the pipe to the motor on hand. For the motor which the author had, the following procedure was adopted.

The motor was removed, and completely disassembled, except for the main worm H. All useless projections and bearings of the cast iron base J (represented by the irregular shading) were cut away. The original shaft of the spring and main drive worm wheel G was discarded, and replaced by a half inch piece of tool steel F. A set screw was attached at N to drive the shaft. It was also found necessary to insert a brass washer I, to take up the excessive play. The groove at O is the point at which the original spring was attached.

The framework J was then screwed into a wooden Box P, whose overall dimensions for this particular motor were 12"x7"x7". The projection Q was left as a means of clamping the unit to the table, tho this was later found to be superfluous, because of the large reducing ratio of the speeds of the worm to gear. A Pulley R was attached to the shaft of the worm H (at the pinion over which the records were originally placed).

A short piece of ½" brass pipe M was reamed to fit snugly over the end of the shaft F. To this was screwed a reducer into which a length of larger brass pipe was attached.

To prevent grit from entering into the motor, the following device was employed. A tin sauce pan D had a ¼" hole drilled into it from the outside. This hole was reamed to nearly ¾", also from the outside. These last two operations resulted in springing the base of the pan inward, and leaving a good size burr L so that the small amount of water used in subsequent grinding could not carry grit into the motor. (If this is not considered sufficient protection, a small tin or brass ring can be attached to the burr L by soldering.) A tube C was made from tin and soldered to the reducer B at E. The sauce pan was kept in position on top of the wooden box by small brads K. For the sake of clarity, the top part of diagram 1 was drawn in cross section.

In the case of the unit here described, the worm reduced the speed of the shaft to 1/30 that of the motor. Hence it was found necessary to have the pulley on the motor 3 to 4 times the diameter of the pulley on the unit.

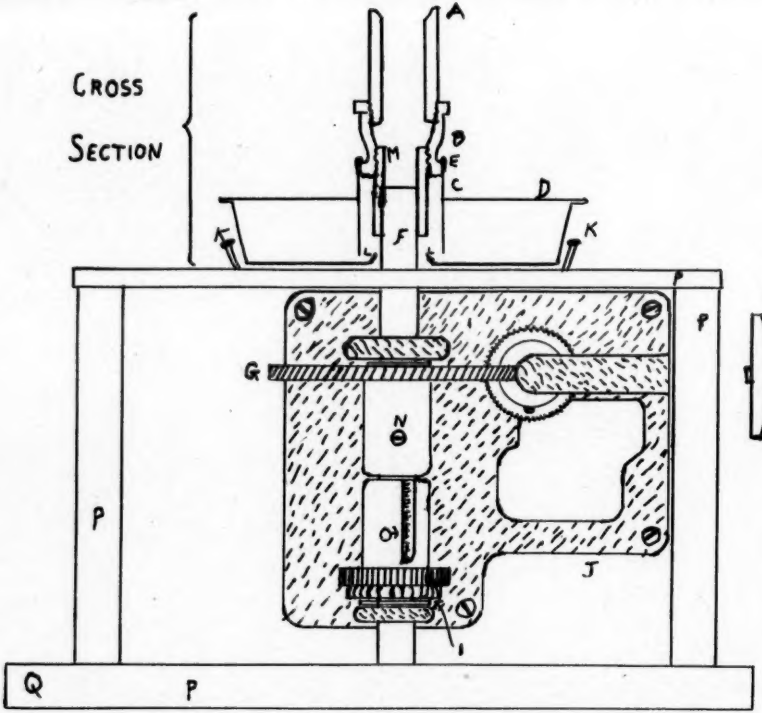

Diagram 1
Right Side View

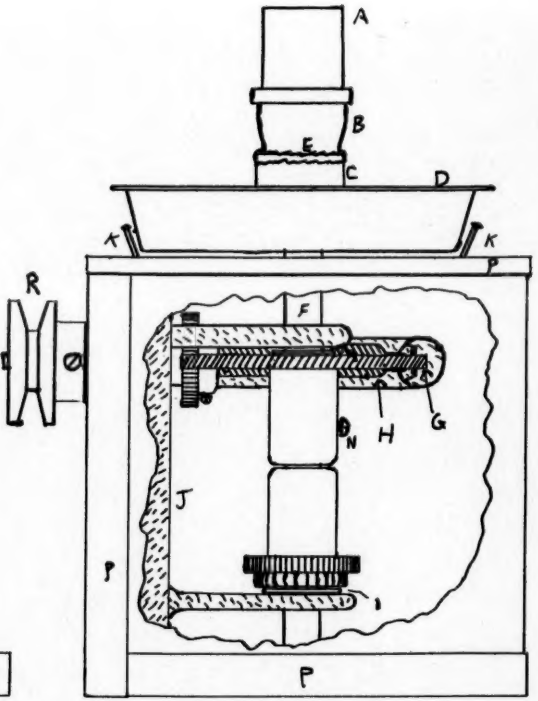

Diagram 2
Front View (Partly cut away)

Any size sphere may be made with the unit here described by slipping larger brass pipes over pipe A, or smaller ones inside A. Very little friction is required between the pipes so used. If there is some slippage, this may be remedied either by inserting some paper between the pipes, or by simply flattening the loose pipe slightly by a gentle tap of the hammer.

Several dozen spheres have already been made with this unit (mostly about ¾" in diameter), including two 2" crystal balls. No signs of collapsing have as yet been noted in the unit. In fact the author hopes to make a 4" crystal ball with it, when and if he can obtain a piece of rock crystal large enough. To prevent the use of too many concentrically placed pipes for larger spheres, a coupling will be found ideal, as it increases the diameter sharply, and is thicker at the end, thereby increasing the grinding surface. For best results the outside diameter of the pipe should be about ⅞ of the diameter of the finished sphere.

For rough grinding 70 or 80 grit carborundum was found to be the best. When the sphere is perfectly round, the size of the grit is gradually reduced (taking care to wash away the coarser grit first) till grit 600 is reached. The sphere is then ready for buffing.

The preliminary steps in making a sphere are of course cutting the cube and grinding as nearly spherical as possible on a carborundum wheel. In the first stages of grinding on this unit time will be saved if the diameter is checked (before all the low spots are ground off) with a caliper. If the pipe is slightly smaller than ⅞ the diameter of the sphere, the sphere may be found to be slightly oval. This may be corrected more rapidly if the two high sides are marked with a pencil, and ground off on the carborundum wheel. Once a nearly perfect sphere is obtained the unit will take care of itself, except for occasional oiling. The right side of the box is purposely left open to permit easy oiling.

With Our Dealers

A new advertiser this month is Perry's Rock Shop, of Poncha Springs, Colo. They are featuring a new gemmy petrified wood and moss agate.

J. Gisler & Son, of San Francisco, Calif., are with us again. They have received a new shipment of choice melanite garnets and very fine black tourmalines which should go over big with collectors.

Some very interesting native coppers are in the stock of Lee Filer, of Central Valley, N. Y. Have you such a specimen in your collection?

Brilliant cut stones are featured this month by Ernest Meier, of New York City. Some of the gems are topazes, sapphires, garnets and zircons. Everybody loves cut stones and especially the ladies.

A few days ago we received Price List No. 61 issued by the H. E. Powell Co., of Little Rock, Ark. A number of interesting Arkansas minerals are listed which should appeal to many collectors. Send for your copy today.

Collectors of desirable minerals should not overlook the items offered this month by Schortmann's Minerals, of Easthampton, Mass.

Cinnabar, molybdenite, and sulphur—3 interesting minerals from Nevada to intrigue collectors. The West Coast Mineral Co., of La Habra, Calif., has them.

A series of unusually good minerals from the trap rock quarries of Paterson, N. J., are set aside this month for our readers by Ward's Natural Science Est., Inc., of Rochester, N. Y.

The "Streamliner" diamond saws manufactured by Wilfred C. Eyles, of Bayfield, Colo., are continuing in popularity. Note the comments by some outstanding cutters.

The Vreeland Lapidary Mfg. Co., of Portland, Ore., manufacturers of the famous Vreco diamond saws, also produce complete lapidary outfits. Send for their catalog.

Although Smith's Agate Shop, of Portland, Ore., are featuring diamond saws exclusively in their advertisements in ROCKS AND MINERALS, they also carry in stock many nice gem minerals suitable for cutting and polishing.

Club and Society Notes

QUEENS MINERAL SOCIETY

A regular monthly meeting was held on Thurs., May 4, 1944, at the Society's headquarters, 85-01—118th St., Richmond Hill. N. Y.

The meeting was called to order at 8:10 p.m. There were 21 members and guests present.

The death of Mr. John A. Grenzig was announced with deep regret. A letter from Mr. A. J. Grenzig and a thank you card from Mrs. J. A. Grenzig were read to the club. Mr. Maynard then read a short eulogy, which is herewith attached.

A thank you note from the Church of the Resurrection for our Easter offering.

Due to unusually heavy expenses this year it was voted to supplement the treasury by an assessment of one dollar per member.

Dr. Trautz announced that for the June meeting Prof. Benadette Pichler, of Queens College, will speak on the mechanics of the microscope, and in July, he, (Dr. Trautz) will continue his talk on the use of the X-Ray.

Mr. Helbig spoke about the fine course in crystallography and blowpipe analysis given every Sunday evening this past winter by Mr. Curt Segeler. All the people who took the course felt that they had learned a great deal and thanked Mr. Segeler for his time and patience. Mr. Segeler said that he would be willing to give the course again next season if there were some people interested in taking it.

Dr. Trautz then announced a possible course to be given to qualified members in optical mineralogy at Queens College in the Fall. There will be a further report next month.

There were no suggestions about a field trip in the near future.

Dr. Armstrong, of the Bell Telephone Labs., was then introduced and she spoke on Minerals through the Microscope. She described the path of light through a polarizing microscope and showed several sets of photomicrograph slides demonstrating the study of minerals under the microscope in ordinary light, plane polarized light, and between crossed nicols. We wish to thank Dr. Elizabeth Armstrong for her kindness in coming all the way out to address our club.

After our speaker Mr. Maynard, chairman of the exchange committee, conducted the distribution of the specimens sent to us from the Mojave Desert Mineral Club.

Bernadette Marcin, Sec'y.

JOHN A. GRENZIG

In the passing of Mr. John A. Grenzig, on Saturday, April 8, 1944, the Queens Mineral Society lost a charter member and the first member to be claimed by death.

Mr. Grenzig was born in Berlin, Germany, in 1863, coming to Brooklyn with his parents at the age of seven.

After leaving school he worked in a printing establishment for several years. He then peddled flowers for some time and with the money which he had saved went into the milk business which he continued until he was operating six wagons.

He then bought out a butter business and was swindled out of everything. He next opened a dairy store at the corner of Myrtle Avenue and Broadway, Brooklyn, which finally had to be closed on account of diphtheria in the family.

In 1899 he came to Woodhaven, opening a grocery store on Jamaica Avenue when this section of the city was nothing but farms. In 1907 he again met with misfortune and was compelled to close his business.

At the age of 45 he went to Cooper Union, from which he was graduated as an assayor. Upon completing this course he was offered a position as assayor with a mining company in Mexico. He and Mrs. Grenzig were preparing to leave for that country when his mother's condition became such that he deemed it inadvisable to go.

In 1909 he started his electrical business at 299 Adams Street, Brooklyn, which he was still operating at the time of his death.

At the age of 10 he developed an interest in minerals which increased with time and until he had gotten together a large collection of fine and unusual mineral specimens. This collection he disposed of a couple of years before his death. He was for many years an active member of the New York, Newark, and Queens Clubs and before his death had been made an honorary member of the Boston Society.

He spoke frequently upon mineralogical subjects and he gave several collections of minerals to schools.

Mr. Grenzig was a friendly man and nothing which he could do for a friend was ever too much trouble. Many a collector owes his start to him. He was well known all over the country as I can testify from experience as while travelling in the west a few years ago, I was very frequently asked "Do you know Mr. Grenzig?"

In the death of Mr. Grenzig mineralogy has lost a devotee whose knowledge of the subject was very great, and the members of this club have lost a friend who grew in esteem and respect with the passing years.

Read at the Queens Mineral Society meeting May 4, 1944, by Mr. Maynard.

Latest News From the Southwest Mineralogists

The Southwest Mineralogists presented their seventh annual Gem and Mineral Exhibit at Harvard Playground in Los Angeles, Calif., on April 1st and 2nd, the awards being as follows:

Minerals, judged according to variety, quality and rarity,
1st prize, Harold Eales
2nd prize, Florence Hake
3rd prize, Ethel Prosser

Crystals, judged according to variety, quality and rarity,
1st prize, Ruth and Frank Stillwell
2nd prize, Harold Eales
3rd prize, Ellsworth Beach

Polished Flats and Nodules, judged according to quality of workmanship, variety of specimens, and outstanding material.
1st prize, Harold Lippett
2nd prize, Albert Hake
3rd prize, Ethel Prosser

Cabochons, judged according to quality of workmanship, variety of specimens and outstanding material.
1st prize, Dr. H. E. McKibben
2nd prize, Bud Prosser
3rd prize, Albert Hake

Artcraft (Includes polished material for personal adornment, articles of utility and pure art) judged according to quality of workmanship, effort and originality.
1st prize, A. C. Barnes
2nd prize, Jeane and Harold Lippett
3rd prize, Bud Prosser

Judges: Mr. Thomas Daniel, Mr. Gordon Funk, Mr. Glenn Harmas and Mr. Richard R. F. Lehman.

Copper minerals were featured and from the many favorable words of comment received it seems that "a good time was had by all" of the more than one thousand persons who attended.

President Standridge and wife Cora were program chairmen for the month of April and following the regular business meeting on April 7th, President Standridge gave a short and very interesting talk on Diamonds. The speaker on April 21st was Dr. Doe whose talk was on Mineral Identification and was vastly interesting and packed with information which should be of great value to all who were privileged to hear it. The field trip of the month to the home of the Standridges was another of those happy occasions when everyone has a perfect time.

Dorothy C. Craig,
Corres. Secretary.

MINUTE on the Death of John A. Grenzig adopted May 7th, 1944.

Whereas:

The passing on of John A. Grenzig on Saturday, April 8th, 1944, was a great shock to the members of the NEWARK MINERALOGICAL Society, as he had attended the monthly meeting of the Society on Sunday, February 6th, 1944, and seemed in good health, taking part in the discussions with his usual vigor.

Mr. Grenzig was a charter member of the Society, deeply interested in the welfare and growth, and adding interest to its meetings by the display of many fine specimens, therefore be it

Resolved, that the members of the NEWARK MINERALOGICAL SOCIETY desire to record their sincere sorrow on the death of their fellow member, recommending that this minute be incorporated in the proceedings of the May meeting and a copy of the same be sent his family.

Herman E. Grote, President. Louis Reamer, Secretary.

TEXAS MINERAL SOCIETY

The Society held its regular monthly meeting on April 11, 1944, at its headquarters in Dallas, Texas. Mr. Chester Howard, well versed on the subject of meteorites, gave a very interesting lecture.

Mr. L. D. Van Cleave, of Joplin, Mo., sent a box of mineral specimens to the Society for a grab bag.

At the May 9th meeting, Dr. L. A. Nelson lectured on the chemistry of rocks. This topic was most interesting to all collectors present.

The June meeting will be devoted to the election of officers for the coming year.

All persons in Texas who can make these meetings are invited to attend them. The Society meets on the 2nd Tuesday of the month at 8 p.m. at the Baker Hotel, Mezzanine Parlor, Dallas.

Mrs. A. L. Jarvis, Sec'y.

Memorial of B. L. Miller

(Continued from page 177)

geology, and mineral resources of certain counties of Maryland, specific data on the so-called "Reading overthrust," and numerous memorials.

In the passing of Dr. Benjamin LeRoy Miller we lose a great geologist.